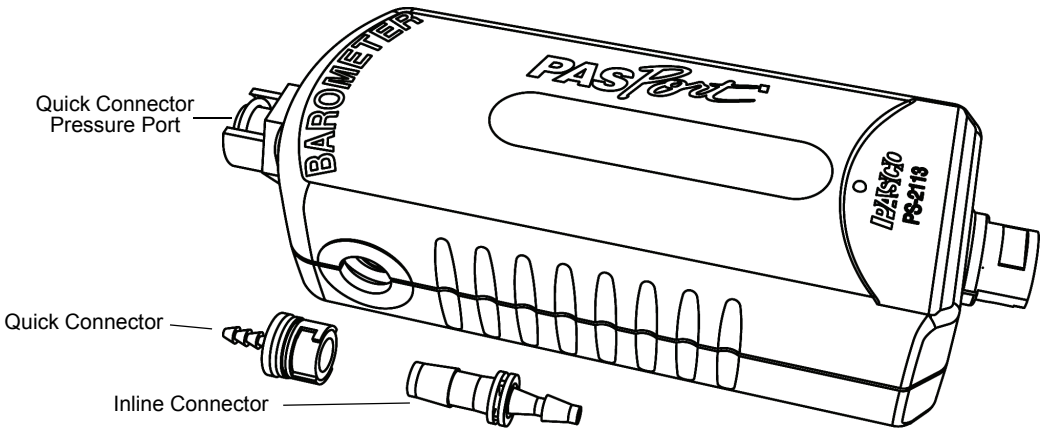
Barometer/Low Pressure Sensor

PS-2113A



Included Items
Tubing, 60 cm (2 ft) - not shown
Connector, inline (4)
Connector, quick (4)

Required Items*
PASCO Interface
PASCO Data Acquisition Software

**See the PASCO catalog or the PASCO web site at www.pasco.com for more information.*

Other Item*
PS-2500 PASPORT Extension Cable

Introduction

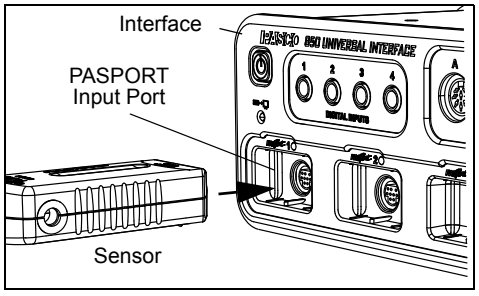
The PS-2113A Barometer/Low Pressure Sensor measures atmospheric pressure in inches of mercury (Hg), hectopascals (hPa), kilopascals (kPa), and millibars (mBar).

The sensor is designed to work with a PASPORT-compatible interface (such as the UI-5100 850 Universal Interface) and PASCO data acquisition software (such as PASCO Capstone). With the data acquisition software, the sensor can be used to measure the barometric pressure over a period of time, the difference in air pressure related to a change in altitude, or the change in pressure inside a plant due to transpiration.

The sensor includes plastic tubing, four inline connectors, and four quick connectors. The quick connector attaches to the pressure port on the front end of the sensor. The inline connector can be used to attach a piece of tubing to a one-hole stopper, for example.

Set-Up

- Plug the Barometer/Low Pressure Sensor into one of the PASPORT input ports of a PASCO interface.



NOTE: If more distance is needed between the sensor and the interface, plug the sensor into a PASPORT Extension Cable, and then plug the cable into the interface.

- Start the PASCO data acquisition software. Set up a data display in the software. Begin recording data.

Specifications

Item	Value
Range:	150 to 1150 hPa 150 to 1150 mBar 15 to 115 kPa 4.4 to 34 inches Hg
Accuracy:	±0.03 inches Hg
Resolution	0.001 inches Hg
Operating Temperature:	0 to 40 °C
Relative Humidity Range	5 to 95%, non-condensing*

**Condensation on the unit will negatively affect performance.*

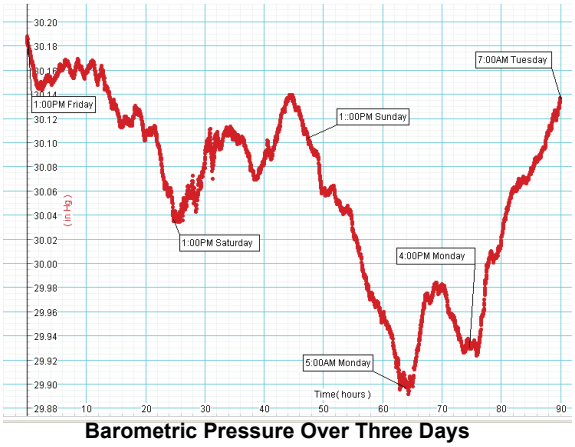
Suggested Activities

Measure Pressure Differences

Use the sensor to measure the difference in air pressure from the floor to the ceiling of the classroom.

Measure Barometric Pressure

Set up the sensor and the data acquisition software to record barometric pressure for a long period of time (24 to 48 hours). Compare the barometric pressure.



Barometric Pressure Over Three Days

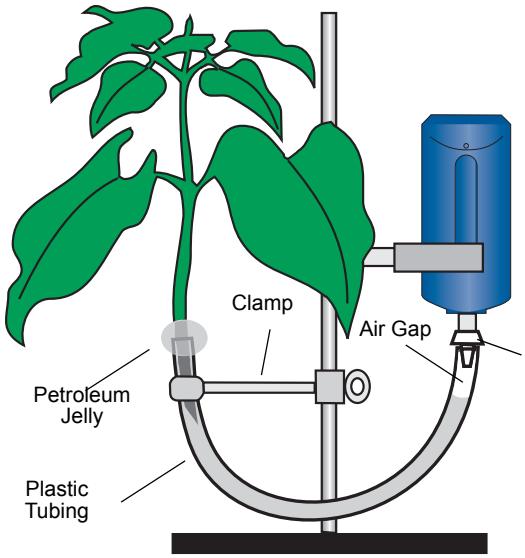
Plant Transpiration

Obtain a healthy plant seedling and soak its stem in a bowl of water. Make a 45° cut near the end of the stem.

Plant-Tube Joint: Fill a foot-long piece of the supplied tubing with water. To avoid air bubbles in the tube, submerge the tubing in the water bowl, and insert the seedling stem into the tube under water. Seal the joint with petroleum jelly.

Sensor-Tube Joint: Create a 2–3 cm air pocket at the other end of the tube. Using a quick connector, connect the tube to the sensor's pressure port. (WARNING: Do not allow fluid to enter the pressure port, as this will damage the sensor.)

Using a rod stand and two clamps, build the setup shown below. Keep the sensor's pressure port 5–7 cm higher than the plant's end of the tube.



Setup for Plant Transpiration

Click the Start button to record pressure data for at least 400 seconds.

Repeat data recording, but place a blowing fan next to the plant to simulate transpiration conditions on a windy day.

Compare the two graphs of pressure versus time.

Setup the Barometer/Low Pressure Sensor

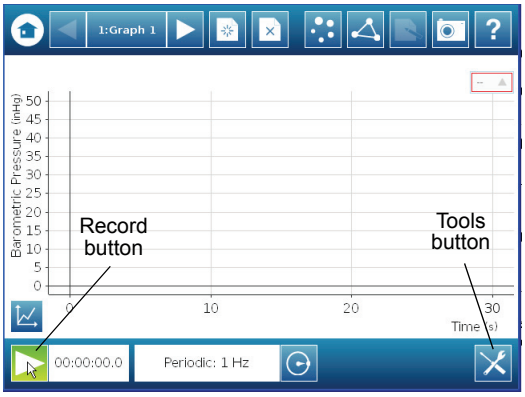
Using the PASCO Capstone Software

- In the PASCO Capstone software, click the "Hardware Setup" icon in the Tools palette to open the "Hardware Setup" panel. Confirm that the Barometer/Low Pressure Sensor icon appears with the interface's icon.
- Click the "Data Summary" icon in the Tools palette to open the "Data Summary" panel. The panel lists the sensor's measurements.
- To select the units of measure or make other changes to the measurement properties, select the parameter in the Sensor Data Summary panel, and then click the "Properties" icon (shaped like a gear) to open the Properties panel.

Using the SPARK Science Learning System

- Start the interface and plug the sensor into a port on the SPARK SLS.

- In the sensor parameter screen, tap ‘Barometric Pressure’ to highlight it, and then tap ‘Show’ to open a graph display.



- Tap the ‘Start’ button to start recording data.

NOTE: To change the parameter or units, tap the ‘Tools’ button in the graph display to open the ‘Experiment Tools’ menu, and tap ‘Data Properties’ to open the Data Properties screen. Tap ‘Select Measurement...’.

Technical Support

For assistance with any PASCO product, contact PASCO at:

Address: PASCO scientific
10101 Foothills Blvd.
Roseville, CA 95747-7100

Phone: +1 916-786-3800 (worldwide)
800-772-8700 (U.S.)

E-mail: support@pasco.com

Web www.pasco.com

For the latest information about the Barometer/ Low Pressure Sensor, visit the PASCO web site at www.pasco.com and enter “PS-2113A” in the Search window.

Limited Warranty For a description of the product warranty, see the PASCO catalog. **Copyright** The PASCO scientific *Instruction Sheet* is copyrighted with all rights reserved. Permission is granted to non-profit educational institutions for reproduction of any part of this manual, providing the reproductions are used only in their laboratories and classrooms, and are not sold for profit. Reproduction under any other circumstances, without the written consent of PASCO scientific, is prohibited. **Trademarks** PASCO, PASCO Capstone, PASPORT, SPARK Science Learning System, SPARK SLS, and SPARKvue are trademarks or registered trademarks of PASCO scientific, in the United States and/or in other countries. For more information visit www.pasco.com/legal.

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This electronic product is subject to disposal and recycling regulations that vary by country and region. It is your responsibility to recycle your electronic equipment per your local environmental laws and regulations to ensure that it will be recycled in a manner that protects human health and the environment. To find out where you can drop off your waste equipment for recycling, please contact your local waste recycle/disposal service, or the place where you purchased the product.

The European Union WEEE (Waste Electronic and Electrical Equipment) symbol (to the right) and on the product or its packaging indicates that this product must not be disposed of in a standard waste container.